REMARKS

Claim Status

Claims 1-34 were pending in the case. Claims 1, 16, 24, 33 and 34 are amended here. No claims are cancelled. Reconsideration is requested.

Claim Rejections - 35 USC §101

Claims 1-23 and 33 stand rejected under 35 USC §101 as directed to non-statutory subject matter. The Examiner said that Claims 1, 16 and 33 recite computer-implemented methods, however, no tangible result is produced. The Examiner cited the *Benson* and *State Street* cases indicating there is need for a practical application to produce a tangible result.

This rejection is traversed. It is clear that the present claims are directed to producing a tangible result which would be an animated image, for instance, for use in animated film or video. Moreover, there is no requirement in the cases cited by the Examiner that the claims actually recite the useful result, but merely that the method or apparatus be directed towards producing a useful or tangible result. It is clear that the present claims (without amendments) are directed towards that. In contrast, the methods in those cases which were found to be non-patentable were merely information manipulation techniques such as calculations or mathematical algorithms. That is clearly not the case here. Hence, this rejection is traversed.

It is pointed out that therefore these rejections are wrong on two counts. First, there is a substantial practical application (animation, as described in detail in the specification); second, there is no requirement in the case law that such be recited in the claims. Further, for purposes of form and to eliminate any possibility of a further §101 rejection, the present independent claims have been amended for instance see preamble of Claim 1, to recite "for animation." The same amendment was made to Claims 16 and 33. It is not believed that this affects the scope of the claims, but does make it clear the result to which the method is directed. In this case, animation includes any sort of computer-generated imagery.

Therefore, it is requested that this rejection be withdrawn.

Claim Rejections - 35 USC §112

The Examiner rejected Claim 33 under 35 USC §112 citing the term "rgba image." This rejection is traversed since this is well shown in Fig. 5. However to obviate any possibility of a further rejection and to make Claim 33 broader than as originally filed, Claim 33 is amended here to eliminate "rgba image" and substitute "color" which is well supported   Therefore, this rejection, while traversed, is further obviated by this amendment.

The Examiner also rejected Claim 16 as reciting "plurality of cutout particles" as having insufficient antecedent basis in the claim. This rejection is traversed, and it is not seen why it was made. The recitation of "a plurality of cutout particles" in line 3 of Claim 16 is clearly the first recitation of this term in the claim and introduces this term into the claim. Hence no antecedent basis is required.

The current amendment in the next to the last line of Claim 16 is merely to improve form and make it clear that the cutout particles referred to in that clause are the same as in line 4 of Claim 16. Therefore, it is requested that this rejection also be withdrawn.

Claim Rejections - 35 USC §103

Claims 1, 6-11, 13, 23, 24, 27, 28 and 29 stand rejected under 35 USC §103 as unpatentable over Cornish. In pertinent part, the Examiner states, see page 4 of Action:

> Cornish teaches generating a plurality of cutout particles, each cutout particle corresponding to a geometric object in the scene description on §1.1 lines 1-13.... Cornish teaches rendering the particle systems with the cutout particles to generate a particle image, wherein at least some cutout particles occlude particles of the particle systems in §2.4, lines 1-17....

Further, the Examiner states on page 5 in his rejection regarding the compositing aspect of the claims:

Though Cornish does not explicitly teach compositing a particle image, it would have been obvious to one of ordinary skill in the art that the data describing the pixels are occluded by particles, as described in the Abstract lines 3-6...which enables particles image data to be composited with the object and generate a composited image as shown in Figs. 4 and 5.

The remaining claims were also rejected under 35 USC §103 citing, in combination with Cornish, Cortis pertaining to Claims 2, 25 and 34; Claims 12 and 31 citing Cornish and Kumar, et al.; Claims 14 and 15 citing Cornish and Van Wijk; and Claims 16-18 and 30 citing Cornish and Blinn. Further, Claims 3, 5, 20-22 and 26 stand rejected under 35 USC §103 as unpatentable over Cornish in view of Blinn and further, in view of Klassen.

The Examiner indicated that Claim 19 would be allowable if rewritten in independent form.

Cornish reference does not meet the claims

It is respectfully submitted that, for instance, Claim 1 clearly distinguishes over Cornish because Cornish was somewhat mischaracterized by the Examiner, does not address the same technical problem as does the present application, and so does not meet several aspects of the present claims.

First, in accordance with the present invention, there is disclosed a method for generating an image based on a scene description "that includes one or more geometric objects and one or more particle systems,". The Examiner believes that Cornish discloses particle systems and the geometric objects. It is respectfully admitted that this is not at all the case. The only reference to "geometry" or "geometric" in Cornish appears to be in the Cornish Abstract line 2, "view-dependent geometric simplification techniques." However, there is no indication that Cornish is working with geometric objects and particle systems. Instead, Cornish is only using particle systems which he uses to animate or depict what he calls "strokes" which are human created drawing techniques using conventional (non-computer) media such as charcoal or painting, or pen or pencil. See first

paragraph, page 1 col. 2 of Cornish "Human artwork typically consists of multiple separate strokes, ranging from dabs with a paintbrush to streaks of charcoal to lines drawn with pen or pencil. Meier [6] introduced the idea of associating strokes with particles defined on the surface of the object to be rendered."

Thus, Cornish merely discusses a particular use of <u>particle systems</u> to depict human type artwork drawn without use of computers but using conventional drawing tools. Cornish is <u>not</u> dealing with geometric objects, as opposed to particle systems. He is merely using particle systems as a single depiction technique to depict human artwork. There appears to be no discussion in any other part of Cornish of geometry or geometric objects. Thus, he is solely dealing with particle systems. Thus the Examiner is inaccurate when he says that Cornish teaches generating a plurality of cutout particles, each cutout particle corresponding to a geometric object. There are no "geometric objects" in Cornish. Geometric objects, as pointed out in the present specification, are an <u>alternate</u> form of depicting parts of a scene, that is an alternative to particle systems. "Geometric object" has a specific meaning in the field and is used in that sense in the present claims.

Next, the Examiner associates the "view-dependent particles" in Cornish with the present claim"cutout particles". However, this makes no sense. Cornish discloses <u>no</u> geometric objects. In contrast, Claim 1 second clause, recites "each cutout particle corresponding to a geometric object." Thus the present cutout particles correspond to a geometric object. Since Cornish has no geometric objects, he cannot have cutout particles.

Moreover, the second clause in the body of Claim 1 recites "at least some cutout particles occlude particles of the particle systems;". This occlusion is useful to allow compositing of the cutout particles with the geometric objects. However, it is not seen where there is any occlusion at all in Cornish. Occlusion, of course, means hiding or covering. It is not seen where there is any such occlusion in Cornish. The view-dependent particles are described in Cornish, as quoted by the Examiner, as allowing placement of the strokes. However, there is no indication that the strokes are geometric objects and, moreover, there is no indication that the Cornish view-dependent particles are occluding any of the particles in the particle system.

Finally, the last clause of Claim 1 calls for "compositing the particle image with an image of the geometric objects...". As the Examiner admits, there is no compositing in Cornish. Cornish instead is directed to the <u>rendering</u> step. It is well understood that the simulation and rendering steps <u>precede</u> compositing, in animation. Since Cornish only has one method of depicting his strokes which is use of the particles, he would have no need to composite particle systems with a geometric object. Hence, not only does Cornish not mention compositing, he would have no need to do so. One of ordinary skill in the art upon review of Cornish would not see any reason to provide the compositing step, since it is unnecessary, Cornish not having two separate types of representations to composite together into a composited image as recited in the final portion of Claim 1.

The rejection of Claim 1 is therefore not supported at all by Cornish, and Claim 1 distinguishes over Cornish for a number of separate reasons as set forth above. Hence the rejection of Claim 1 is traversed and it is requested that it be reconsidered and withdrawn.

The other references fail to make good these deficiencies in Cornish.

The other reference which seems of most relevance is Kumar. The Examiner cites Kumar, page 4, (which shows a picture of the sun.) The apparently relevant passage of Kumar on page 4 is:

> Only one major issue came up with this comment, and that is with regards to alpha blending.... The issue which stems from this was with regard to alpha blending our particles with the polygons on the surface.

Therefore Kumar does disclose alpha blending of particles with polygons, where polygons may be geometric objects. This use of alpha blending in blending geometry-based renderers and particle systems is acknowledged in paragraph 4 of the <u>present</u> application as being known, as a means of compositing. It is pointed out however in the present specification that this leads to certain other technical problems and is not a particularly good solution. Hence at best, Kumar shows the well known use of combining particle systems with geometric objects. However, it is clear that Kumar does not disclose other important aspects of Claim 1 including, for instance,

the cutout particles or the occlusion. In that sense, Kumar is not disclosing much more than the technical problem to which the present application is directed. Hence Kumar even in combination with Cornish fails to meet the present independent claims.

All claims depending upon Claim 1 distinguish over the references for at least the same reason as does Claim 1.

Claim 16 is directed to subject matter somewhat similar to, but not the same, as Claim 1. Claim 16, like Claim 1, calls for the "cutout particles" and refers to "an amount occluded by one or more of the cutout particles." Hence, Claim 16 distinguishes over the references for at least the same reasons as Claim 1.

The claims dependent upon Claim 16 are similarly allowable.

Claim 24 is a system claim that recites some of the same limitations as Claim 1 and is allowable for at least the same reasons as is Claim 1, although not being of the same scope. The claims dependent on Claim 24 are similarly allowable.

Claims 33 and 34 are similarly allowable.

Therefore all present pending claims are allowable and allowance thereof is requested.
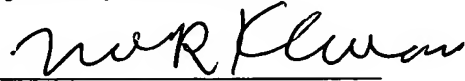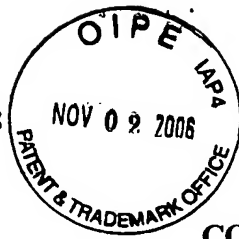
CONCLUSION

In view of the above, all pending claims in this application are believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone interview would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 590282001100.

Dated: November 2, 2006   Respectfully submitted,

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